Postpartum Complications

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Objectives

- Recognize common and potentially life-threatening postpartum complications
  - Postpartum hemorrhage
  - Postpartum venothromboembolic disease
  - Postpartum fever
  - Postpartum thyroiditis
  - Peripartum cardiomyopathy
  - Postpartum blues, psychosis & depression
- Direct the initial (and possibly definitive) management of the ill postpartum patient
- Know the appropriate threshold for subspecialty consultation

Postpartum Complications

Postpartum Hemorrhage

Postpartum Hemorrhage

Definition

- greater than 500cc blood loss (vaginal delivery) or 1000cc blood loss (cesarean)
- decrease in HCT of 10 or greater
- obstetrical emergency that can follow vaginal or cesarean delivery with clinical instability leading to transfusion, shock, renal failure, acute respiratory distress, and coagulopathy

Postpartum Hemorrhage

Incidence

- 3% of all births
- 6.4% of caesarean deliveries
- 3rd most common cause of maternal mortality

Postpartum Hemorrhage

- General Approach
  - ABCs, 2 IVs, O2, T & C, urgent OB consult
  - examine and treat patient simultaneously
  - if bleed is prior to placental delivery, give oxytocin & do manual extraction
  - if bleed is after placental delivery, palpate the uterus. If evidence of atony, massage and treat
  - repair genital tract tears
  - remove retained products
  - foley catheter, CBC, coags. & treat ABNL's
  - recombinant activated factor VIIa recently approved by FDA for bleeding related to hemophilia A & B inhibitors, factor VII deficiency, and postpartum uterine atony (2 doses of 90 mcg/kg q3h)
  - if refractory to medical therapy consider surgical options

Postpartum Hemorrhage

Causes (the four T's):

- tone
- tissue
- trauma
- thrombin

Postpartum Hemorrhage: Tone

- Etiology: uterine atony (incidence is 1 in 20 deliveries)
- Risk Factors:
  - uterine overdistension (hydramnios, multiple gestation, oxytocin use, macrosomia)
  - high parity
  - prolonged labor
  - intramniotic infection
  - tocolytics

Postpartum Hemorrhage: Tone

Treatment

- General Measures (ABC's, O2, IV crystalloids, transfusion)
- Specific Measures:
  - bimanual uterine massage, consider uterine packing
  - medications
    - Oxytocin 10-40 units/liter NS running continuously
    - Methylergonovine (methergine) 0.2mg IM q2-4 hours
    - hemabate ® 250 mcg IM q15-90 minutes up to total dose of 2 mg
    - Misoprostol 800-1,000 mcg PR (can be given to women with asthma or HTN)
  - surgery

Mental Break

Postpartum Hemorrhage: Tissue

- Etiology
  - retained placenta (occurs in 6% of vaginal deliveries)
  - invasive placenta (1 in 2,500 pregnancies)
    - **A**ccreta: **A**dherent to myometrium
    - **I**ncreta: **I**nvades myometrium
    - **P**ercreta: **P**enetrates myometrium
- Risk Factors
  - previous peripartum curettage
  - previous cesarean
  - placenta previa
  - high parity

Postpartum Hemorrhage: Tissue

Treatment

- General Measures (ABC's, O2, IVF, transfusion)
- Specific Measures
  - manual removal with or without tocolytic
  - surgical removal

Postpartum Hemorrhage: Trauma

- Incidence: 20% of postpartum hemorrhages
- Types
  - uterine inversion
  - uterine rupture
  - birth canal trauma

Postpartum Hemorrhage: Trauma (uterine inversion)

- Incidence: 1 in 2,000 deliveries
- Presentation: bluish grey mass protruding from vagina, shock out of proportion to blood loss
- Risk Factors: macrosomia, fundal placenta, oxytocin use, primiparity, invasive placenta

Postpartum Hemorrhage: Trauma (uterine inversion)

Treatment

- General Measures (ABC's, O2, IVF, transfusion)
- Specific Measures
  - manual replacement with or without tocolytics (terbutaline or nitroglycerin) or general anesthesia
  - consider hysterectomy
  - follow replacement with oxytocin

Postpartum Hemorrhage: Trauma (uterine rupture)

- Incidence: 1 in 2,500 deliveries
  - 0.2-1.5% of women with prior low transverse cesarean incision (up to 9% for other incisions)
- Risk Factors
  - prior uterine surgery, or >1 prior C/S
  - maternal age >30 years
  - dysfunctional labor with use of induction agents
  - Inter-delivery interval <18-24 months
- presentation
  - vaginal bleeding
  - abdominal tenderness
  - tachycardia
  - * most common sign is fetal bradycardia (sometimes preceded by variable or late decels.)
  - cessation of uterine contractions or change in uterine shape
  - increasing abdominal girth
  - hypotension and/or shock

Postpartum Hemorrhage: Trauma (uterine rupture)

Treatment

- General Measures (ABC's, etc.)
- Repair of defect or hysterectomy (somewhat governed by desire for future fertility)

Trauma
(birth trauma—lacerations, hematomas)

- Risk factors
  - primiparity
  - operative vaginal delivery
  - multiple gestation
  - vulvovaginal varicosities
  - inadequate hemostasis
- Treatment
  - lacerations: repair
  - hematomas
    - <3cm may observe if stable
    - if larger or unstable, incise and evacuate clot, ligate vessels, close in layers

Postpartum Hemorrhage: Thrombin

Coagulopathies account for 1% of cases of PPH

- Causes
  - congenital
  - drug-induced
  - obstetric
- Management
  - lab studies
    - PT/PTT/INR
    - fibrinogen
    - fibrin split products
    - platelets, blood count

Postpartum Hemorrhage: Thrombin

- Correct Deficiencies
  - maintain fibrinogen >100mg/ml with FFP (raises fibrinogen 10mg per 100ml of FFP)
  - reduce prolonged INR with FFP
  - maintain platelets >50K (platelet packs increase count by 5K per unit)

Postpartum Hemorrhage

General Preventive Measures

- correcting anemia prior to delivery
- episiotomies only if necessary
- active management of third stage
- assess patient after completion of paperwork to detect slow steady bleeds

Mental Break

Postpartum Complications

Postpartum Venothromboembolic Disease

Postpartum Thromboembolic Disease

Incidence

- DVT: 3 in 1000
  - ½ of postpartum DVT's occur in the first 3 days following delivery
- PE: 1 in 2700 to 7000

Postpartum Thromboembolic Disease

Pathophysiology

- pregnancy is a naturally hypercoagulable state
- pregnancy is associated with increased venous stasis
- pregnancy is associated with vascular trauma

Postpartum Thromboembolic Disease

Risk Factors

- prior venothromboembolic disease
- major surgery (including cesarean)
- operative vaginal delivery
- immobilization
- trauma or infection
- pre-existing hypercoagulable state

Postpartum Thromboembolic Disease

Signs/symptoms

- DVT
  - swelling
  - leg or abdominal pain
  - tenderness
  - warmth
  - palpable cord
  - differential calf circumference
  - leukocytosis (up to 20K is normal postpartum value)
- PE
  - tachypnea/dyspnea
  - tachycardia
  - cough
  - pleuritic chest pain
  - rales
  - hemoptysis
  - fever
  - diaphoresis
  - cyanosis
  - loud S2
  - hypotension
  - syncope

Postpartum Thromboembolic Disease

Diagnosis

- DVT
  - doppler ultrasound: 98% sensitive, 95% specific
  - venography: gold standard, only used when noninvasive test nondiagnostic
- PE
  - ABG
  - CXR
  - ECG
  - CT scan vs V/Q scan
  - pulmonary angiography

Postpartum Thromboembolic Disease

Treatment

- unfractionated heparin
- low molecular weight heparin
  - greater efficacy (for DVT in non-pregnant patient)
  - decreased risk of heparin-induced thrombocytopenia
  - decreased risk of osteoporosis

Treatment is continued 6-12 weeks post event (3 months)

Postpartum Complications

Postpartum Fever

Mental Break

Postpartum Fever (endometritis)

- Signs/symptoms
  - uterine tenderness
  - foul discharge
  - fever
  - leukocytosis (bacteremia, usually w/ one organism, occurs in 10-20% of patients
  - infection involves the decidua (pregnancy endometrium) frequently with extension into the myometrium
  - incidence for vaginal birth is <3%, but 5-10 X higher for C/S, especially if non-elective
  - antibiotic prophylaxis with cefazolin 1 gm IV or ampicillin 1-2 gm IV reduces rate of post-cesarean endometritis by 66-75%. May also use intrauterine antibiotic irrigation. Evidence is inconclusive for low-risk, scheduled cesarean.

Postpartum Fever (endometritis)

- Treatment
  - most infections are polymicrobial (aerobes and beta-lactamase-producing anaerobes from the genital tract)
  - vaginal colonization with BV or GBS can increase likelihood of endometritis by as much as 80%
  - mycoplama hominis may cause 10% of postpartum fevers (further study needed)
  - antibiotics
    - clindamycin (900 mg q 8h) plus gentamicin (1.5 mg/kg q8h) with cure rates of 90-97%
    - add ampicillin (2gm q4h) to cover resistant organisms such as enterococci
    - metronidazole (500mg PO or IV q8h may be more effective than clindamycin against gram negative anaerobes, but avoid in breastfeeding mothers)
  - treat 4-5 days, continue 1-2 days past defervescence, with orals if staph. bacteremia

Postpartum Fever (endometritis)

- Treatment (continued)
  - 10% will not respond in 48-72 hours
  - look for other source of fever (pelvic abscess, septic pelvic thrombophlebitis, drug-induced fever, wound infection, retained products of conception)
  - consider resistant organism and broaden coverage appropriately

Postpartum Fever (septic pelvic thrombosis)

- Incidence
  - 1 in 13,000 vaginal deliveries
  - 1 in 400 cesarean deliveries
  - striking predilection for postpartum women (fulfills Virchow's triad of thrombotic factors: hypercoagulability, vein wall changes, and slow flow)
- Diagnosis
  - persistence of spiking, "picket fence" fevers, in absence of pain, despite antimicrobial therapy
  - blood CX's usually negative
  - measurement of clotting factors not fully studied
  - all currently available imaging techniques are insensitive

Postpartum Fever (septic pelvic thrombosis)

- Treatment
  - Broad-spectrum antibiotics with activity against streptococci, enterobacteriaceae, and anaerobes
  - Surgical ligation of involved veins associated with high morbidity/mortality
  - previously treated with heparin, although recent studies show no benefit
  - resolves by 6-7 days on antibiotics with or without heparin

Postpartum Fever (wound/perineal infections)

- Wound infections
  - cesarean incision infection rate 3 to 15%, decreases to 2% with prophylactic antibiotics
  - infections usually polymicrobial
- Perineal infections
  - incidence: 0.05 to 0.5% of vaginal deliveries
  - treatment: debridement, removal of sutures, drainage, antibiotics
  - complications: necrotizing fasciitis, sepsis

Postpartum Thyroiditis

- Incidence

  3-16% of PP women, 25% in Type II diabetics

  20-30% hyperthyroid 1-4 mos. PP for 2-8 wks., becoming hypothyroid for 2-8 wks., then recovering

  20-40% hyperthyroid, only (can persist in 25-50% cases)

  40-50% hypothyroid, only, occurring 2-6 mos. PP

Postpartum Thyroiditis

- Manifestations include anxiety, weakness, irritability, palpitations, dry skin, low energy
- Diagnosis

  Minimal thyromegaly without ophthalmopathy

  High or high NL T4 & T3, low TSH, low uptake

  65-85% have high thyroid Ab’s

Postpartum Thyroiditis

- Treatment

  Majority require no treatment except for bothersome Sx's of hyperthyroidism (use B-blockers except in nursing pts.), or symptomatic hypothyroidism (use levothyroxine)

  Rx on clinical, not biochemical, grounds

  Re-evaluate q6-12 mos.

Peripartum Cardiomyopathy

- Definition

  Onset of cardiac failure in 3rd trimester or within 5 mos. PP

  Absence of identifiable cause

  Absence of pre-existing heart dz.

  LV systolic dysfunction

Postpartum Cardiomyopathy

- Incidence: 1 in 3,000 to 1 in 4,000 births
- Etiology

  Cause unknown

  Evidence for role of inflammatory cytokines (TNF & IL-6)

  Myocarditis suggested but not confirmed

  Familial clustering suggests genetic etiology

  Pregnant state leads to LV remodeling & hypertrophy -> ? marked decrease in LV fcn. in PPCM

  Selenium deficiency -> incr. susceptibility to viral infections & HTN

Postpartum Cardiomyopathy

- Risk Factors

  >30 y/o, multiparity, multiple gestation

  AA descent

  H/O prenatal or PP HTN

  >4 weeks oral tocolytics w/ adrenergic agents

Postpartum Cardiomyopathy

- Diagnosis

  EKG

  CXR

  echocardiogram

  Cardiology referral for possible cath. or BX

Postpartum Cardiomyopathy

- Treatment

  Similar to other types of CHF = digoxin, diuretics, sodium restriction, B-blockers, afterload reduction

  Avoid nitrates & ACE inhibitors

  Consider anti-coagulation w/ heparin if pre-delivery (due to short half-life & reversibility), but may use Coumadin during 3rd trimester & beyond, w/ INR goal of 2.0 to 2.5

  Use of IVIG has been studied = >10% increase in EF

  Consider cardiac transplant if other measures fail to stabilize pt.

Postpartum Blues

- Transient & mild mood swings w/ irritability, anxiety, poor concentration, insomnia
- Incidence is 40-80% of PP women within 2-3 days of delivery, peaking on Day # 5, resolving within 2 weeks
- Etiology not conclusively identified, but believed to be related to estrogen withdrawal
- Risk factors include H/O depression or PMMD, and pre-existing psychosocial impairment
- Treatment should include conservative & supportive measures, night-time baby care, discretionary use of meds. for insomnia

Postpartum Psychosis

- Incidence is 0.1-0.2%
- Typically presents within 2 weeks of delivery w/ mania, depression or schizoaffective disorder, which could endanger pt. or newborn.
- This is a MEDICAL EMERGENCY which mandates an immediate psychiatric consult

Postpartum Depression

- Onset within first month PP
- Incidence 5-9% (similar to that in non-pregnant women), but may be under-reported
- Risk factors include antenatal depression or psychiatric FH, marital conflict, unplanned pregnancy, previous miscarriage, deferral of breastfeeding, hyperemesis gravidarum, congenital fetal ABNL's
- Etiology is probably multifactorial: genetic susceptibility, hormonal changes, major life stressors. PP period increases vulnerability.

Postpartum Depression

- Symptoms include changes in somatic functions (sleep, energy, appetite, weight, GI fcn., insomnia unrelated to newborn's sleep pattern), guilt, anxiety, anger, loss of bonding w/ newborn, and obsessional thoughts of harming oneself or baby.
- Screening w/ Edinburgh Postnatal Depression Scale (10-item self-report) is 5X more sensitive than routine clinical eval. Responses are scored 0,1,2 or 3 w/ max. score of 30 (scores >12 = PP depression)

Postpartum Depression

- Pre-Treatment Evaluation should include CBC, TSH, renal & liver fcn., urine tox. screen, & screening for use of OTC's incl. herbals
- Treatment

Use biopsychosocial approach

Restore sleep, suggest light therapy

Pharmacotherapy can include SSRI's, SNRI's such as Paxil, Celexa, Effexor, Lexapro, Zoloft, Prozac and Trazadone or Wellbutrin for insomnia

Limited data on hormonal therapy

Psychotherapy recommended

Social services intervention as needed

www.depressionafterdelivery.com (1-800-944-4773)

www.postpartum.net (1-805-967-7636)

KEY: PREVENTION of crisis in women w/ H/O PP depression or pre-existing depression

Postpartum Complications

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